

Applicant: WU, Shang-Neng
Appln. Serial No. 10/790,603
On AIR MATTRESS CONTROL UNIT

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

Claims 1-6 (cancelled)

Claim 7 (new): A system for supplying air and controlling the flow of air into and out of the chambers of a patient-supporting low air loss air mattress, the system comprising:
a controllable blower having an intake port and an exhaust port;
air supply lines leading to the chambers of an air mattress;
pressure sensors operatively connected to the air supply lines; and
means for selectively directing air from the blower exhaust port to the chambers of the air mattress
or routing the flow of air from the air mattress into the blower intake port.

Claim 8 (new): The system as recited in claim 7, wherein the air supply lines have electrically controlled valves for controlling the amount of air that can flow therethrough.

Claim 9 (new): The system as recited in claim 8, wherein the air supply lines have pressure sensors interposed between the valves and the chambers of the air mattress for sensing the air pressure in the chambers of the air mattress.

Claim 10 (new): The system as recited in claim 7, wherein the means for directing air comprises a multiple-position rotary valve.

Claim 11 (new): The system as recited in claim 10, wherein the rotary valve includes a housing defining an outlet port, an inlet port, and air mattress supply ports.

Applicant: WU, Shang-Neng
Appln. Serial No. 10/790,603
On AIR MATTRESS CONTROL UNIT

Claim 12 (new): The system as recited in claim 11, wherein the housing inlet port communicates with the blower exhaust port, the air mattress supply ports communicate with the air supply lines leading to the chambers of the mattress, and the housing outlet port communicates with the blower intake port.

Claim 13 (new): The system as recited in claim 10, wherein the rotary valve has a gate member rotatably received by the housing in a first or second position.

Claim 14 (new): The system as recited in claim 13, wherein the gate member has one or more ports able to align with the valve housing inlet port when the gate member rotates in the first position, thereby allowing the gate member to communicate with the valve housing inlet port and air mattress supply ports, the blower intake to communicate with the outside environment, and the blower exhaust with the air mattress supply ports.

Claim 15 (new): The system as recited in claim 10, wherein the gate member has one or more ports able to align with the valve housing outlet port when the gate member rotates in the second position, thereby allowing the gate member to communicate with the valve housing inlet port and the air mattress supply ports, the blower exhaust to communicate with the outside environment, and the blower intake with the air mattress supply ports.

Claim 16 (new): The system as recited in claim 7, further comprising a programmable control unit connected to the blower, the pressure sensors, and the valves.

Applicant: WU, Shang-Neng
Appln. Serial No. 10/790,603
On AIR MATTRESS CONTROL UNIT

Claim 17 (new): The system as recited in claim 16, wherein the control unit receives pressure signals from the pressure sensors and transmits a signal to incrementally close the valve in the air supply line having an air pressure above the predetermined range of pressures.

Claims 18 (new): The system as recited in claim 17, wherein the control receives pressure signals from the pressure sensors and transmit a signal to incrementally open the valve in the air supply line having an air pressure below the predetermined range of pressures.

Claim 19 (new): The system as recited in claim 18, wherein the control unit is able to transmit a signal to incrementally increase the supply of electrical power to the blower motor to increase the blower output if pressure in an air supply line is below a selected range of pressures and the valve in that line is completely open.

Claim 20 (new): The system as recited in claim 19, the control unit is able to receive inputs for the height and weight of the patient, determine acceptable air mattress supply line back pressures corresponding to patient and mattress interface pressures given inputs valves for patient weight and height, whereby the values may be controlled to maintain patient and mattress interface pressures that are below pre-determined values.

Claim 21 (new): A method for inflating and deflating a patient support air mattress, the method comprising providing a blower producing air flow in pneumatic communication with the internal chamber of an air mattress, the blower including an inlet and an outlet; inflating the mattress by directing the flow of air in an inflation direction; and deflating the mattress by directing the flow of air in a deflation direction.

Applicant: WU, Shang-Neng
Appln. Serial No. 10/790,603
On AIR MATTRESS CONTROL UNIT

Claim 22 (new): The method according to claim 21 wherein directing the flow of air in a deflation direction comprises redirecting the flow of air with a multi-position valve.

Claim 23 (new): The method according to claim 22 wherein redirecting the flow of air with a multi-position valve comprises removing the blower outlet from pneumatic communication with the air mattress internal chamber and placing the blower outlet in pneumatic communication with the air mattress internal chamber.

Claim 24 (new): The method according to claim 23 wherein directing the flow of air in an inflation direction comprises placing the blower outlet in pneumatic communication with the air mattress internal chamber, and directing the flow of air in a deflation direction comprises placing the blower inlet in pneumatic communication with the air mattress internal chamber for rapid deflation.

Claim 25 (new): An inflatable patient support apparatus comprising:

an inflatable mattress including an internal chamber,

an air transmission device operable to provide air flow into and out of the internal chamber,

and

a multi-port valve controlling the air flow to inflate or deflate the mattress.

Claim 26 (new): The apparatus according to claim 25 and wherein the valve comprises a two-position rotary valve.

Claim 27 (new): The apparatus according to claim 26 wherein the air transmission device comprises a blower.

Applicant: WU, Shang-Neng
Appln. Serial No. 10/790,603
On AIR MATTRESS CONTROL UNIT

Claim 28 (new): The apparatus according to claim 27 wherein the blower comprises a single direction blower.

Claim 29 (new): The apparatus according to claim 25 further comprising a control unit, a plurality of sensors, and a plurality of pressure control valves, the mattress including a plurality of internal chambers, the pressure sensors providing pressure indication from the internal chambers to the control unit, and the control unit opening or closing the valves to change pressure inside the internal chambers.

Claim 30 (new): The apparatus according to claim 25 wherein the multi-port valve is manually operated.